SMOKING ATTRIBUTABLE MORBIDITY, MORTALITY, AND ECONOMIC COSTS LOUISIANA, 1994

Smoking is the leading cause of preventable illness and premature death throughout the United States, causing over 400,000 premature deaths each year, more than are caused by AIDS, alcohol, car crashes, murders, suicides, and illegal drugs combined (1). Smoking contributes to illness and death due to cancers, heart disease, strokes, other vascular diseases, respiratory diseases, premature and low birth weight infants, sudden infant death syndrome, and burns. Persons who die as a result of smoking-related illness would have lived an average of 15 years longer had they not smoked (2). Heart disease and cancer are the two of the leading medical diagnoses at death in Louisiana and the US. About one-quarter of all heart disease deaths and 30% of all cancer deaths are attributable to cigarette smoking, making smoking the leading actual cause of death. Cigarette smoking also causes a number of serious and chronic illnesses, notably cardiovascular and chronic lung diseases, that compromise the quality of life and contribute to substantial time lost from work. Taken together, premature deaths and chronic illnesses that result from cigarette smoking place heavy human and economic costs on the citizens of Louisiana, their families, and employers. When these are added to the economic costs of the medical care incurred, the human and economic costs of cigarette smoking are substantial.

METHODS:

The estimates of smoking attributable morbidity, mortality, and economic costs presented below were calculated using Smoking Attributable Mortality, Morbidity, and Economic Cost (SAMMEC II) (3). SAMMEC II is a computerized model for estimating the health and economic costs attributable to cigarette smoking developed by the US Centers for Disease Control and Prevention. This model uses data from the medical literature to estimate the proportion of deaths due to selected diagnoses that are attributable to cigarette smoking and combines this with state-based mortality (death certificate) data to estimate the number of deaths due to cigarette smoking. SAMMEC II uses standard prevalence-based methods for estimating the economic costs due to these same illnesses. Direct costs include medical care expenditures for smoking-related illnesses. Indirect costs include lost income resulting from premature deaths or illnesses due to cigarette smoking. Data used by the model to generate 1994 estimates of morbidity, mortality, and economic costs for Louisiana include 1994 Louisiana mortality data, 1994 smoking prevalence data from the Louisiana Behavioral Risk Factor Survey, 1990 Louisiana population data from the US Census, and personal health care expenditures for hospitalization, physician services, nursing homes, medications, and other professional services as calculated for Louisiana for 1993 by Levit, et al. based data from the Heath Care Financing Administration (HCFA)(4). Life expectancy figures from the National Center for Health Statistics were used to calculate years of potential life lost (5). Estimated future earnings were discounted at 4%.

The model underestimates the human and economic costs due to tobacco in several ways. Smoking related illnesses and deaths generally occur a number of years after smoking begins. SAMMEC II uses current smoking rates to estimate the proportion of current deaths and medical costs that are attributable to smoking while the actual disease and cost burdens today are due primarily to smoking that occurred in the past when smoking rates were higher. Morbidity,

mortality, and costs due to leukemias, peptic ulcer disease, and other diseases to which smoking may contribute but for which attributable proportions are not well developed are excluded. Illnesses associated with cigar and pipe smoking and smokeless tobacco use are not included. Most importantly, physical pain and suffering and psychosocial costs for persons with smoking-related illnesses and their families are not represented. Finally, economic benefits from the tobacco industry including profits, taxes, and jobs are not included in the model. Cost savings for Medicare, Social Security, and pension funds that result from premature deaths are not considered.

Data from the Louisiana Department of Revenue on tobacco excise taxes were used to estimate the number of packs of cigarettes sold annually in Louisiana. These figures were used to compute estimated state sales tax revenues and wholesale and retail profits on cigarettes based on the minimum markups required by state law (R.S.51-141). Data from the Louisiana Department of Agriculture were used to compute farm income related to tobacco.

FINDINGS:

In 1994 twenty percent (7,951) of all deaths in Louisiana were attributable to cigarette smoking resulting in 123,049 years of potential life lost. Almost all (99%) of these deaths occurred as a result of cancer, heart disease, strokes, vascular and respiratory diseases. In that year one-quarter of Louisiana adults were current smokers. Smoking rates were highest for African-American men (35.7%) and lowest for African American women (17.7%). Rates were intermediate for white men (27.6%) and white women (23.9%).

Total direct and indirect costs for 1994 in Louisiana attributable to cigarette smoking were estimated at $1.46 billion. Smoking attributable direct medical care costs totaled $465 million. This includes $328.7 million for hospitalization, $52.8 million for physician services, $53.4 million for nursing home services, $27.2 million for medications, and $2.9 million for other professional services. Males age 35-64 accounted for over one half (53.7%) of the total smoking attributable direct cost.

Indirect costs for 1994 in Louisiana due to cigarette smoking were estimated at just under $1 billion ($993.3 million), including $889.5 million (86%) due to productivity lost as a result of premature deaths and $104 million (9.6%) due to smoking-related illnesses. Nearly 80.4% ($83.6 million) of this was attributed to persons aged 35-64; and 50.3% to men in this age group. Over 1.1 million days of work are lost each year in the state due to tobacco.

Tobacco excise tax revenues for Louisiana for fiscal years 1993-96 totaled between $82 million and $89 million annually, approximately 5-6% of total direct and indirect costs. When estimated state sales tax revenues are added, state taxes on tobacco totaled between $111 million and $121 million annually for the same years, about 7% of total direct and indirect costs. Persons on Medicaid and with no health insurance have higher rates of current smoking than persons with private insurance. Since almost half of Louisiana residents are on Medicaid or have no health insurance, it is likely that the state bears close to half of all direct medical care costs due to tobacco through Medicaid or indigent care. Thus, state tax revenues amount to less than half of the estimated direct health care costs borne by State government.

Louisiana farmers planted 18 acres of tobacco in 1994 and eight in 1995 (6). Estimates of non-tax economic benefits from tobacco for Louisiana based on estimated number of packs sold derived from tobacco excise tax revenues and required markups at wholesale and retail levels are approximately half of state tax revenues. Thus the combined wholesale and retail profits and state excise and sales taxes are nearly 90% lower than the estimated direct and indirect costs of tobacco in Louisiana.

DISCUSSION:

Cigarette smoking places significant human and economic burdens on the people of Louisiana. For the most part, those who pay for the health care costs and suffer premature deaths and disability are different from those who profit from tobacco products.

Some have argued that non-smokers incur medical costs and draw Social Security and pensions that off-set the earlier medical care costs and productivity losses of smokers. It has also been argued that economic cost estimates such as SAMMEC II should also take into account the economic contributions of the tobacco industry. In 1983, in a study done for the Tobacco Institute, Chase Econometrics estimated that the tobacco industry generated 710,000 jobs. This is amounts to approximately two jobs for every premature death attributable to tobacco products each year. Chase Econometrics also found that if the US were to become tobacco free, most jobs lost in states with sizeable tobacco industries would shift to other industries in non-tobacco states as a result of cigarette smokers shifting their tobacco expenditures to other products (7).

Whatever the economic burden, the greatest burden from tobacco is measured not in dollars, but in human lives and suffering. One-quarter of deaths in Louisiana in 1994 were attributable to tobacco and occurred an average of 13 years earlier than they should. Their families suffered with them through their illnesses and were deprived of their company.

Smoking-related illnesses, premature deaths, and economic costs can be reduced if current smokers are able to successfully stop smoking and if smoking is not initiated by children and youths. Because the nicotine in cigarettes is addicting, once daily smoking is initiated, stopping is very difficult. Almost 90% of adult cigarette smokers began smoking by the time they were 18 years old (8). Public health efforts to reduce the health effects of cigarette smoking should include smoking cessation services, but should focus on preventing initiation of tobacco use by children and youth. This should include active enforcement of laws to prevent persons under 18 from purchasing tobacco products coupled with community-based efforts to assure that this occurs. Laws should be modified to reduce access to tobacco products by children through banning of tobacco vending machines, at least in places where children are allowed. Adults should band together with children and youth at the community level to create healthy environments that are smoke-free and that support a tobacco-free norm for our children and youth. Local communities should be allowed to adopt policies that support such a tobacco-free norm. Comprehensive school health programs should provide high quality, factual information to children at all levels. Children and youth should receive clear messages from parents, teachers,

and other adults that they should remain smoke free coupled with realistic information about how few of their peers smoke. Children and youth should be taught to interpret advertising and promotional messages carefully and to make good personal choices. Consideration should also be given to increasing tobacco excise taxes as a means to reduce tobacco use by children and youth who have been shown to be more price-sensitive than adult smokers, and to recover some of the medical care costs attributable to tobacco. Studies in Canada have shown that a 10% increase in the price of a pack of cigarettes led to a 7.9% decrease in consumption (9). At least a portion of these tax revenues should be dedicated to efforts to reduce tobacco initiation by children and youth.

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SMOKING PREVALENCE RATES FOR LOUISIANA (ALL RACES), BRFSS, 1999

AGE CATEGORY	MALES			FEMALES		
	CURRENT SMOKER	FORMER SMOKER	NEVER	CURRENT SMOKER	FORMER SMOKER	NEVER
35-64	22.2	29.8	47.9	25.4	20.9	53.5
65+	11.2	57.5	31.3	4.8	25.0	62.3

SMOKING PREVALENCE RATES FOR UNITED STATES (ALL RACES), 1999

AGE CATEGORY	MALES			FEMALES		
	CURRENT SMOKER	FORMER SMOKER	NEVER	CURRENT SMOKER	FORMER SMOKER	NEVER
35-64	31.9	31.7	36.4	25.9	19.5	54.7
65+	15.6	50.4	34.0	12.2	20.8	67.1

SMOKING PREVALENCE RATES FOR LOUISIANA (WHITES), BRFSS, 1999

AGE CATEGORY	MALES			FEMALES		
	CURRENT SMOKER	FORMER SMOKER	NEVER	CURRENT SMOKER	FORMER SMOKER	NEVER
35-64	28.5	36.1	35.0	24.9	23.6	51.2
65+	10.4	62.7	26.9	12.7	24.3	62.4

SMOKING PREVALENCE RATES FOR UNITED STATES (WHITES), 1999

AGE CATEGORY	MALES			FEMALES		
	CURRENT SMOKER	FORMER SMOKER	NEVER	CURRENT SMOKER	FORMER SMOKER	NEVER
35-64	31.0	33.2	35.7	26.0	20.6	53.4
65+	14.8	51.9	33.3	12.3	21.3	66.5

SMOKING PREVALENCE RATES FOR LOUISIANA (BLACKS), BRFSS, 1999

AGE CATEGORY	MALES			FEMALES		
	CURRENT SMOKER	FORMER SMOKER	NEVER	CURRENT SMOKER	FORMER SMOKER	NEVER
35-64	39.1	20.3	40.6	25.4	13.4	61.2
65+	18.2	36.4	45.4	5.7	31.4	60.0

SMOKING PREVALENCE RATES FOR UNITED STATES (BLACKS), 1999

AGE CATEGORY	MALES			FEMALES		
	CURRENT SMOKER	FORMER SMOKER	NEVER	CURRENT SMOKER	FORMER SMOKER	NEVER
35-64	41.8	21.0	37.2	27.8	14.0	58.2
65+	25.1	36.0	39.0	11.8	17.7	70.6

SMOKING-ATTRIBUTABLE MORTALITY, LOUISIANA MALES

	<1-34	35-64	65-85+	ALL AGES
NEOPLASMS/CANCERS	0	674	1236	1909
CARDIOVASCULAR	0	925	1478	2403
RESPIRATORY	0	119	679	798
PERINATAL	18	0	0	18
OTHER	3	10	8	21
TOTAL	21	1728	3401	5149

STANDARD POPULATION (1994): 829,652 ADJUSTED RATE: 669.3 per 100,000

SMOKING-ATTRIBUTABLE MORTALITY, LOUISIANA FEMALES

	<1-34	35-64	65-85+	ALL AGES
NEOPLASMS/CANCERS	0	291	555	846
CARDIOVASCULAR	0	391	988	1379
RESPIRATORY	0	82	464	646
PERINATAL	12	0	0	12
OTHER	5	5	10	19
TOTAL	17	769	2017	2802

STANDARD POPULATION (1994): 987,363 ADJUSTED RATE: 400.8 per 100,000

Gender Specific Smoking-Attributable Deaths and Total Deaths - Selected Causes, Louisiana, 1994

DIAGNOSIS	Smoking-Attributable		Louisiana 1994 Total Deaths	
	MALES	**FEMALES**	**MALES**	**FEMALES**
NEOPLASMS (140-149, 150, 157, 161, 162, 180, 188, 189)	1909	846	2458	1484
CARDIOVASCULAR (410-414, 380-398, 401-404, 415-417, 420-429, 430-438, 440-448)	2403	1379	7064	7800
RESPIRATORY (491-492, 496, 480-487, 493)	798	546	1288	1195
PERINATAL (765, 769, 770, 798.0)	18	12	149	103
OTHER (890-899)	21	19	21	19
TOTAL	**5149**	**2802**	**10980**	**10601**

Note - Per 100,000 population

Total Deaths and Smoking-Attributable Proportion of Deaths by Selected ICD-9 Codes, Louisiana, 1994, Both Genders

DIAGNOSIS	Total Deaths	Smoking-Attributable Deaths	% of Deaths Attributable to Smoking
NEOPLASMS (140-149, 150, 157, 161, 162, 180, 188, 189)	3942	2755	69.9%
CARDIOVASCULAR (410-414, 380-398, 401-404, 415-417, 420-429, 430-438, 440-448)	14864	3782	25.4%
RESPIRATORY (491-492, 496, 480-487, 493)	2483	1344	54.1%
PERINATAL (765, 769, 770, 798.0)	252	31	11.9%
OTHER (890-899)	40	40	100.0%
TOTAL	**21581**	**7952**	**36.8%**

Note - Per 100,000 population

Total Deaths and Smoking-Attributable Deaths, Louisiana Females, 1994

DIAGNOSES	Total Deaths	Smoking-Attributable Deaths	% of Deaths Attributable to Smoking
Respiratory TB	13	3	23.1%
Lip, Oral Cavity	42	23	54.8%
Esophagus	37	24	64.9%
Pancreas	244	67	27.5%
Larynx	8	7	87.5%
Lung	946	679	71.8%
Uterine Cervix	86	26	30.2%
Bladder	43	13	30.2%
Kidney	78	7	9.0%
Rheumatic Heart Disease	35	4	11.4%
Hypertension	596	71	11.9%
IHD	3262	529	16.2%
Pulmonary Heart Disease	146	18	12.3%
Other Heart Disease	114	13	11.4%
Cerebrovascular	1370	161	11.8%
Atherosclerosis	163	40	24.5%
Aortic Aneurysm	90	23	25.6%
Other Arterial Disease	2024	519	25.6%
Pneumonia/Influenza	553	109	19.7%
Bronchitis/Emphysema	142	104	73.2%
Asthma	52	12	23.1%
Chronic Airways Obstr	435	318	73.1%
Low Birth Weight	44	6	13.6%
Resp Distress Syndrome	13	2	15.4%
Resp Condition Newborn	19	3	15.8%

SIDS	27	2	7.4%
Burn Deaths	19	19	100.0%
TOTAL	**10601**	**2802**	**26.4%**

Total Deaths and Smoking-Attributable Deaths, Louisiana Males, 1994

DIAGNOSES	Total Deaths	Smoking-Attributable Deaths	% of Deaths attributable to smoking
Respiratory TB	21	7	33.3%
Lip, Oral Cavity	107	96	89.7%
Esophagus	119	93	78.2%
Pancreas	232	47	20.3%
Larynx	59	47	79.7%
Lung	1733	1535	88.6%
Uterine Cervix	0	0	0.0%
Bladder	102	44	43.1%
Kidney	106	48	45.3%
Rheumatic Heart Disease	18	4	22.2%
Hypertension	388	91	23.5%
IHD	3604	961	26.7%
Pulmonary Heart Disease	78	18	23.1%
Other Heart Disease	68	16	23.5%
Cerebrovascular	946	257	27.2%
Atherosclerosis	111	59	53.2%
Aortic Aneurysm	154	83	53.9%
Other Arterial Disease	1697	915	53.9%
Pneumonia/Influenza	486	148	30.5%
Bronchitis/Emphysema	201	169	84.1%
Asthma	29	9	31.0%
Chronic Airways Obstr	551	465	84.4%
Low Birth Weight	70	9	12.9%
Resp Distress Syndrome	14	2	14.3%

Resp Condition Newborn	27	4	14.8
SIDS	38	3	7.9%
Burn Deaths	21	21	100.0%
TOTAL	**10980**	**5151**	**46.9%**

Total Deaths and Smoking-Attributable Deaths, Louisiana, 1994, Both Genders

DIAGNOSES	Total Deaths	Smoking-Attributable Deaths	% of Deaths Attributable to Smoking
Respiratory TB	34	10	35.3%
Lip, Oral Cavity	149	119	85.2%
Esophagus	156	117	80.8%
Pancreas	281	114	33.2%
Larynx	67	54	87.9%
Lung	2679	2214	87.9%
Uterine Cervix	86	26	41.9%
Bladder	145	57	45.5%
Kidney	184	55	35.9%
Rheumatic Heart Disease	53	8	24.5%
Hypertension	984	162	24.0%
IHD	6866	1490	28.2%
Pulmonary Heart Disease	224	36	24.1%
Other Heart Disease	182	29	23.6%
Cerebrovascular	2316	418	25.2%
Atherosclerosis	274	99	48.2%
Aortic Aneurysm	244	106	52.9%
Other Arterial Disease	3721	1434	50.0%
Pneumonia/Influenza	1039	257	33.0%
Bronchitis/Emphysema	343	273	84.3%
Asthma	81	21	35.8%
Chronic Airways Obstr	986	783	84.2%

Low Birth Weight	114	15	13.2%
Resp Distress Syndrome	27	4	14.8%
Resp Condition Newborn	46	7	13.0%
SIDS	65	5	9.2%
Burn Deaths	40	40	100.0%
TOTAL	**32366**	**7953**	**24.8%**

LIFE EXPECTANCY FOR LOUISIANA

AGE	MALES	FEMALES
<1	67.7	75.9
1-19	55.0	67.2
20-24	47.9	55.6
25-29	43.6	50.8
30-34	39.1	46.0
35-39	34.6	41.2
40-44	30.3	36.6
45-49	26.1	32.1
50-54	22.2	27.8
55-59	18.6	23.7
60-64	15.4	19.9
65-69	12.5	16.3
70-74	10.0	13.0
75-79	7.9	10.0
80-84	6.0	7.6
85+	3.1	4.5

YEARS OF POTENTIAL LIFE LOST PRIOR TO AGE 85 FOR LOUISIANA MALES

AGE	ALL RACES	WHITES	BLACKS	OTHER
<1	71.0	71.3	64.4	66.6
1-19	62.5	63.2	56.5	58.6
20-24	50.5	51.1	44.5	46.6
25-29	45.9	46.5	40.2	41.2
30-34	41.3	41.9	35.9	37.8
35-39	36.8	37.3	31.8	33.6
40-44	32.3	32.7	27.8	29.5
45-49	27.8	28.2	24.0	25.5
50-54	23.5	23.8	20.3	21.6
55-59	19.5	19.7	16.9	18.0
60-64	15.7	15.9	13.7	14.7
65-69	12.4	12.4	10.9	11.8
70-74	9.3	9.3	8.4	9.1
75-79	6.6	6.6	6.1	6.7
80-84	4.4	4.3	4.3	4.7
85+	2.6	2.6	3.0	3.3

YEARS OF POTENTIAL LIFE LOST PRIOR TO AGE 85 FOR LOUISIANA FEMALES

AGE	ALL RACES	WHITES	BLACKS	OTHER
<1	77.8	78.4	72.9	74.6
1-19	69.2	69.7	64.9	66.4
20-24	56.9	57.4	52.6	54.2
25-29	52.1	52.5	47.9	49.4
30-34	47.3	47.7	43.2	44.6
35-39	42.5	42.9	38.6	40.0
40-44	37.7	38.1	34.1	35.4
45-49	33.0	33.3	29.7	31.0
50-54	28.5	28.7	25.5	26.7
55-59	24.1	24.3	21.5	22.6
60-64	20.0	20.1	17.8	18.8
65-69	16.1	16.2	14.4	15.3
70-74	12.5	12.5	11.1	12.0
75-79	9.2	9.2	8.4	9.0
80-84	6.2	6.2	5.9	6.3
85+	3.8	3.8	4.1	4.3

LOUISIANA LIFETIME EARNINGS (4% Discount Rate)

AGE	MALES	FEMALES
<1	$426,127.00	$350,801.00
1-19	$569,999.00	$468,354.00
20-24	$760,103.00	$591,292.00
25-29	$773,913.00	$580,978.00
30-34	$748,212.00	$542,810.00
35-39	$687,101.00	$486,161.00
40-44	$595,391.00	$415,203.00
45-49	$478,230.00	$336,746.00
50-54	$346,574.00	$254,147.00
55-59	$219,320.00	$175,669.00
60-64	$118,026.00	$109,455.00
65-69	$59,162.00	$62,326.00
70-74	$29,887.00	$33,798.00
75-79	$12,791.00	$17,214.00
80-84	$6,366.00	$8,286.00
85+	$1,914.00	$1,916.00